PURPOSE AND NEED STATEMENT

Introduction: Function and Role of the Alaskan Way Viaduct Corridor and Alaskan Way Seawall

The Federal Highway Administration (FHWA), the Washington State Department of Transportation (WSDOT), and the City of Seattle (City) are proposing major improvements to the Alaskan Way Viaduct Corridor and to the Alaskan Way Seawall. Both the Alaskan Way Viaduct Corridor and the Alaskan Way Seawall are located in downtown Seattle, King County, Washington. The Alaskan Way Viaduct Corridor extends from approximately Spokane Street on the south to north of the Battery Street Tunnel. The Alaskan Way Seawall extends from South Washington Street to Bay Street along Elliot Bay on Puget Sound.

The Alaskan Way Viaduct Corridor (part of SR 99) and Interstate 5 (I-5) are the two primary north-south routes to and through downtown Seattle. The Alaskan Way Viaduct Corridor currently carries about 110,000 vehicles a day and serves both through trips and trips accessing the downtown business district. The Alaskan Way Viaduct Corridor provides the quickest and most convenient route to and through downtown Seattle for communities located to the northwest and southwest of downtown. The Corridor plays a vital role in freight mobility, providing a major truck route through downtown, and providing access to the Ballard-Interbay and greater Duwamish manufacturing and industrial centers. The Corridor also serves as a transit route for local and express bus service.

The section of the Alaskan Way Viaduct Corridor between Spokane Street and South Holgate is a limited-access facility, operating with signalized intersections and driveways. This portion of the Alaskan Way Viaduct Corridor currently operates adequately because the signalized segments effectively regulate traffic volumes. Congestion that currently develops is typically the result of incidents or back-ups at access ramps.

The Alaskan Way Seawall consists of various types of construction, the majority of which was completed in 1934 extending from Madison Street to Bay Street. This portion uses vertical piles and a horizontal timber-relieving platform to hold the vertical face of the Seawall in place. Most of the remainder of the wall south of Madison was constructed in 1916.

The Seawall supports Alaskan Way (the surface street) and a variety of utilities. The fills retained by the wall provide lateral support for some of the foundations of the Alaskan Way Viaduct as well as the foundations for some nearby buildings. Alaskan Way includes King County Metro's Waterfront Streetcar, which provides trolley access to the International District, Pioneer Square, various Seattle waterfront locations along Elliott Bay and Myrtle Edwards Park. Alaskan Way also provides access to Colman Dock, which supports vehicle and passenger ferry service to Bainbridge Island and Bremerton, and passenger ferry service to Vashon Island.

Purpose of the Proposed Action

The purpose of the proposed action is to provide a transportation facility and seawall with improved earthquake resistance that maintains or improves mobility and accessibility for people and goods along the existing Alaskan Way Viaduct Corridor.

Need for the Proposed Action

The Alaskan Way Viaduct and Alaskan Way Seawall are both at the end of their useful life. Improvements to both are required to protect public safety and maintain the transportation corridor. Because these facilities are at risk of sudden and catastrophic failure in an earthquake, FHWA, WSDOT and the City of Seattle seek to implement these improvements as quickly as possible. WSDOT and the City of Seattle have identified the following underlying needs the project should address:

Safety

Seismic Vulnerability

The ability of the Alaskan Way Viaduct and Alaskan Way Seawall to withstand earthquakes needs to be improved. The Alaskan Way Viaduct is vulnerable to earthquakes because of its age, design and location. Built in the 1950's, the Alaskan Way Viaduct is past the halfway point in its 75-year design life and does not meet today's seismic design standards. Additionally, the soils around the foundations of the Alaskan Way Viaduct consist of former tidal flats covered with wet, loose fill material. The Alaskan Way Seawall holds these soils in place along the majority
of the Alaskan Way Viaduct corridor, which is also vulnerable to earthquakes.

WSDOT studies in 1995 and 1996 concluded that the soils on which the Alaskan Way Viaduct is constructed are vulnerable to soil liquefaction and may lose their ability to support the structure. Studies concluded that if an earthquake of magnitude 7.5 or higher occurred close to Seattle, the Alaskan Way Viaduct could be rendered unusable or even collapse.

The 1996 WSDOT study also demonstrated that the Alaskan Way Seawall, which holds the waterfront soils in place, could fail if the soils liquefy. If the Alaskan Way Seawall fails, the liquefied material may spread laterally to the west and into Elliot Bay jeopardizing nearby facilities and structures.

The February 28, 2001 Nisqually earthquake (magnitude 6.8, located 35 miles from Seattle and deep below the surface) caused moderate damage to the Alaskan Way Viaduct. The structure was closed for inspection and repairs intermittently for several days over a period of several months. The extent of damage and loss of the heavily traveled corridor heightened awareness of the need for immediate improvements to the corridor. A Structural Deficiency Report was prepared after the earthquake and it concluded that continued reliance on the existing viaduct is not prudent.

Following the Nisqually earthquake, field investigations and liquefaction analyses were performed for a portion of Alaskan Way (the surface street) where settlements of the roadway had occurred. These investigations concluded that a portion of the loose fills below the relieving platform liquefied and settled in areas where the Seawall structure has been heavily damaged by Marine borer activity. It is possible that fill in other locations along Alaskan Way may have begun to liquefy, even though there is no other evidence of widespread roadway settlement.

Traffic Safety

Traffic safety along the Alaskan Way Viaduct Corridor needs to be improved. Traffic accident data for the years 1998 through 2000 indicate that high levels of traffic accidents occur in some portions of the Alaskan Way Viaduct Corridor. The southbound and northbound lanes of SR 99 in the Battery Street tunnel had 124 and 84 accidents, respectively. These were the highest numbers of accidents among all street segments recorded by the City in those three years. In addition, the following four segments in the Alaskan Way Viaduct section of SR 99 had unusually high numbers of traffic accidents: the northbound segment from the 1st Avenue on-ramp to the Seneca Street off-ramp (77 accidents), the southbound segment from the Columbia Street on-ramp to the 1st Avenue off-ramp (67 accidents), the southbound segment from the South Lander Street to the West Seattle on-ramp (43 accidents), and the northbound segment from the Seneca off-ramp to the Western Avenue off-ramp (35 accidents). WSDOT designates the Battery Street Tunnel and the northbound and southbound lanes near the 1st Avenue ramp as High Accident Locations (HALs).

Roadway Design Deficiencies

The Alaskan Way Viaduct Corridor does not meet current roadway design standards and has several types of deficiencies, which need to be improved.

The lane width provided on the Viaduct does not meet current design requirements. The existing lane striped widths are 10-feet. The standard lane width for this type of facility is 12-feet. Narrow lane width affects roadway capacity and operating speeds as well as safety. In addition, substantial sections of the Viaduct have minimal or no shoulders. The standard shoulder widths for a divided multi-lane facility are 10-feet to the right of traffic and 4-feet to the left of traffic. Additional width is required if there is a traffic barrier, bridge column and retaining walls. Lack of shoulders or non-standard shoulder width can severely affect operations of the roadway as well as the safety of the roadway.

The on- and off-ramps of the Viaduct also do not reflect current design standards. The existing ramp configurations do not provide adequate sight distance; gore area, and ramp taper rate. Reduced sight distance affects the ability of drivers to enter, drive upon, and exit the roadway safely. The current geometry does not provide long enough acceleration and deceleration lanes. Short acceleration and deceleration lane lengths affect the ability of drivers to enter and exit the freeway system safely. Gore area is the refuge area for drivers when they want to make corrections to their decision to exit or not to exit the freeway. By not providing the gore area, drivers lose decision time to make such corrections and hence impact safety. Substandard ramp tapers do not provide drivers with adequate length to exit and enter into freeway traffic.

System Linkage

Another need served by the project is for an integrated regional transportation system. The WSDOT is currently planning to extend SR 509 south from its current terminus near South 188th Street to connect with I-5 and improve access to and from communities south of Seattle-Tacoma International Airport. SR 509 connects to SR 99 at the First Avenue S. Bridge, and serves as a major route from the south to downtown Seattle and nearby port facilities and industrial areas.

Changes proposed, as part of the SR 519 Intermodal Access Project in the vicinity of Safeco Field would improve east-west connections between the waterfront and I-5 and I-90, both of which are principal corridors in the regional transportation system. Traffic from the I-5 and I-90 freeways heading for the downtown waterfront, stadium area, and Port and ferry terminals currently crosses the Burlington Northern Santa Fe (BNSF) mainline railroad track at-grade on South Royal Brougham Way. The SR 519 Intermodal Access Project will provide grade-separated crossings of the BNSF on both South Atlantic Street and South Royal Brougham Way and improve surface street connections from Alaskan Way to the Colman Dock ferry terminal. Phase 1 (Atlantic Street Bridge and Alaskan Way South Surface Street Improvements) is currently under construction, with completion projected for 2003.

Washington State Ferries are a division of the State Department of Transportation, and the ferry system is part of the state highway system. The Colman Ferry Dock connects downtown Seattle with ferry service to Bremerton, Bainbridge Island, and passenger ferry service to Vashon Island. Over 10 million passengers and 3 million vehicles currently use these ferries annually. Service expansion to Kingston and Southworth is included in the State's long-range plans for the ferry system.

As part of implementing the South Lake Union neighborhood plan, the City is currently exploring options for improving mobility in the area, including east-west mobility between SR 99 and I-5. The City is also planning to widen the Spokane Street Viaduct. The Spokane Street Viaduct provides the major link between I-5 and West Seattle (via the West Seattle Bridge). The major transit route from West Seattle to downtown Seattle is by way of the West Seattle Bridge and the Alaskan Way Viaduct.

Bicycle and Pedestrian Safety and Accessibility

Bicycle and pedestrian safety, mobility, and accessibility need to be maintained or improved as part of the surface improvements to Alaskan Way and connecting streets. The Seattle waterfront is the center for Seattle's well-developed comprehensive Urban Trails System. Regional trails from the north, east and west converge on Alaskan Way. Every day, thousands of tourists, recreational walkers and joggers, shoppers, bicyclists, ferry users and office workers utilize Alaskan Way.

GOALS AND OBJECTIVES

In addition to the project purpose and need, the following goals and objectives will guide project development.

Seattle's Plans for the Downtown Waterfront

Improvements to the Alaskan Way Viaduct and Alaskan Way Seawall need to be integrated with and supportive of existing activities and land use plans for the Seattle waterfront. The Seattle downtown waterfront has been transformed from its origins as a working waterfront, characterized by shipping, warehouse and industrial uses, to an important area for tourism and recreation. The central waterfront now has a vibrant mix of uses which include office, retail, hotel, residential, conference center, aquarium, museum, parks, cruise ship terminal, ferry terminal, and various types of commercial and recreational moorage. Land use plans and policies for downtown Seattle and the waterfront which will guide improvements in the Corridor include: improving pedestrian and bicycle access to and along the waterfront; providing for views of Elliott Bay and the mountains and waters beyond; physically and visually reconnecting the waterfront to the rest of downtown; providing increased opportunities for public access to and enjoyment of the waterfront; and encouraging use of Alaskan Way for local rather than through travel.

Plans for Habitat Improvement

The existing Alaskan Way Seawall provides poor habitat for chinook salmon (listed as threatened under the Endangered Species Act) and other marine species. Reconstruction of the Alaskan Way Seawall offers an opportunity to improve habitat where practicable and feasible. Elliott Bay is an important link for juvenile salmon migrating from the Duwamish River toward the Pacific Ocean. The vertical bulkheads of the Alaskan Way Seawall and other features of the waterfront provide minimal habitat for the numerous young chinook and chum salmon that migrate across the Seattle waterfront to the north shore of Elliott Bay during their critical rearing period. Mitigation plans for project impacts to threatened and endangered species will address potential means of enhancing habitat.